Assessing Headwater Streams: Linking Landscapes to Stream Networks

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Headwater streams (streams draining ≤1 mi^2) represent a significant land-water boundary and drain 70-80% of the landscape. The Ecological Exposure Research Division (EERD) is developing field protocols and identifying physical and biological indicators of flow permanence for headwater streams. Drying is common in headwater streams, and this may confound our ability to use traditional assessment methods. The tools we are developing will allow states, regions, and tribes to better classify and assess water quality in headwater streams. Headwater streams are vital components to drainage systems and are directly linked to our downstream rivers and lakes. However, alteration and loss of headwater streams have occurred without an understanding of the potential consequences to larger downstream water bodies. Furthermore, headwater streams provide a more direct measure of land-use effects because they drain smaller areas with less land-use complexity than their larger counterparts; therefore, headwater streams may also be useful for identifying specific causes of water quality impairment. Understanding associations between the distribution of aquatic organisms and flow permanence is the first step in developing biocriteria for our nation's most abundant running waters. Although this work was reviewed by EPA and approved for publication, it may not necessarily reflect official Agency policy.